

Set Etiquette and Production Safety

CHAPTER 18

A film set is an exciting, intense, and often pressure-packed environment filled with energetic people who are focused, driven, and usually working with limited time and resources. In this environment there is often a temptation to cut corners to get the job done. But cutting certain corners often proves to be counterproductive—or worse, downright foolish and dangerous. The following sections cover essential set etiquette and safety issues that should always be observed so that your project is safe, productive, and rewarding (Figure 18-1).

■ SET ETIQUETTE: RESPECT, COURTESY, AND GOOD WORK

Everyone on a film set should be treated with respect. This is not just a top-down issue (e.g., producers respecting the grips) but goes for all crewmembers toward each other. As they say in the business, when you come onto a film set, leave your ego at the door. Respect has three dimensions on a film set: we must respect the project, we must respect the people on the project, and we must respect ourselves by doing good work. This brief code of conduct outlines the standards of behavior on a film set for showing and earning respect as a member of a film production team:

1. *Do your job, whatever that job is, to the best of your ability.* Films are created by a coordinated group of individuals; one person slacking off can throw the whole thing off and places unfair burden on someone else who has their own job to do. Doing your job well also means knowing your job well. If you sign on to be the sound mixer on someone's film, then you had better know how to be an excellent sound mixer. Educate yourself, train, learn what you need to know to be exceptional at your job, whatever that job is. And given the rate of technological change in this field, many crew roles require that crew engage in regular research to remain current with the state of the art. Doing your job well also means staying alert and being ready when you are needed. Sometimes, there are chunks of downtime on a film set, but you must keep your ears and eyes open for anything that needs doing in your department. Lulls in activity are not invitations to go wandering off to get snacks or make personal phone calls. You never know when the set will suddenly come alive, and the last thing you want is for a producer or director to shout, "Anybody know where the hell [so-and-so] is? We need to shoot a take!" If you are a knowledgeable, conscientious, reliable, and effective worker, whether you're a production assistant photocopying screenplay sides or the D.P., people will want to work with you again and again. Every single project you participate in, from your first student film, is part of the reputation you establish for yourself.
2. *Always be on time, which means be early!* The film industry places a very high premium on promptness. Being late shows a phenomenal lack of respect toward the other people who arrive on time ready to work; in other words, when you are late, you waste other people's valuable time. This goes for everyone



■ **Figure 18-1** Film sets involve an intense, focused, and highly coordinated effort by a group of individuals engaging in diverse tasks yet sharing a common goal—to make a great movie. For this “controlled chaos” to work, proper set etiquette must be observed at all times.

on a film during all stages, from directors starting crew meetings on schedule, to the makeup person showing up on set on or before call time. Being late can hold up an entire crew and waste valuable production time. I remember being on a set where the crew waited 25 minutes for the guy who operated the teleprompter. No one else could do it, we couldn't shoot without it, so we all just had to wait. When he arrived he was full of excuses (the weather, the traffic, etc.) and he worked that day—but he never worked for that producer again and was fired by the teleprompt company. If you have a reputation for being late (even on the level of film school), you simply will not work much.

3. *Maintain a positive “can-do” attitude.* Film productions involve lots of problem solving: rigging a light where there is no space, getting just the right camera angle, recording useable audio in hostile environments, and so on. A production thrives with people who love a challenge and are innovative when it comes to solving or working around less than ideal circumstances.
4. *Respect the team structure.* It is often said that a film set is “controlled chaos.” The thing that keeps this process from devolving into “total chaos” is the way crews are organized and tasks are delegated. No matter what the size of the production team—from four students to 34 paid professionals—a film crew is highly organized and specialized. Everyone has a specific job to do and people they report to. You must respect the chain of command, the division of labor, and the areas of the other people on the team. Let's say you're a boom operator and the ideal place to position the microphone catches one of the lights and casts a shadow on the set. It's a serious breach of etiquette to adjust that light yourself. Instead, speak with the gaffer, explain the situation, and between the two of you you'll work it out.
5. *Treat everyone with courtesy.* If you treat people well, they will treat you well. Listen to people. Crew should, of course, listen closely to the department heads, but D.P.s, art directors, directors, and producers should also listen to their crews. Give praise where praise is due and do not take credit if it is not yours to claim. Learn people's names. Don't criticize negatively or humiliate people if mistakes are made. Don't create work or call meetings that are unnecessary. Don't get in the way of the work other people have to do. Crude comments or jokes about race, sex, religion, or specific people on the set are simply not appropriate and inevitably erode trust and good will. Raucous behavior in general can throw everyone's concentration off—stay cool, calm, and focused.

Now, all this does not necessarily mean every film set is a total love-fest. In fact, you will surely find yourself on sets where you don't necessarily like some of the people you're working with. But personal feelings ultimately should not enter into the equation. Everyone has a job to do, and everyone should behave as a professional and do that job regardless of personalities. When you sign onto a film (paid or not), you have a personal obligation to do your job as well as you can and see the project through successfully. Once it's all over, then you can vow never to work with certain people ever again, but for the duration of that film shoot you must do your job.

Food and Breaks

Twelve-hour workdays are not unusual on a film production. When a crew finds its groove and they're knocking down setups and keeper takes with the smooth efficiency of a well-oiled machine, everyone on the set enters an altered state, and time becomes relative. Four hours can pass but will seem like moments. However, the body knows that it's been working hard for hours. To maintain the morale and physical stamina of the crew, well-timed breaks for food are essential. You cannot expect people to work long hours for you if you do not feed them. And a **food break** means all work stops to allow the cast and crew to sit, relax, and eat; it does not mean sandwiches on the run. Giving people meal breaks will only make them a happier, healthier, and more productive crew. You also need to make sure that the food is somewhat interesting. When I was a student I once worked as a grip (for free) on a low-budget, seven-day (12 hours/day) film shoot. To save money, the producer decided to serve the crew pizza twice a day. He also decided not to spring for coffee

in the morning. The thought of seven days of pizza was more than any of us could bear. After four days he had a disgruntled crew who organized a meeting with the producer to demand some variety for our meals. The next day we had sandwiches, but from that point on the crew referred to him as the “pizza producer.” We did our jobs and we did them well, but when it was over we all vowed never to work for him again.

Because film shoots are long and hard, and food is essential, you should take any dietary issues of your crew seriously. A producer or production manager should know before ordering food who is a vegetarian or if people have any food allergies. It’s a big problem if you’ve been shooting for six hours and order pizza only to discover that the sound mixer is allergic to dairy products and therefore cannot eat anything.

Another critical detail is to always have water available throughout the shooting day. Film work is physically strenuous and sets can get hot, so you must have plenty of water on hand to keep your crew hydrated. This is especially critical for exterior locations on hot days. And it only stands to reason that if you want your crew to drink water to stay hydrated, then you’d better make sure that there are bathrooms conveniently available on the set. If you’re at an exterior location, do not imagine that people can just go behind trees or bushes. Also, don’t assume that the local fast-food joint will allow your cast and crew access to its toilets. Part of preproduction is securing (or renting) the necessary facilities.

Courtesy on Public Locations

Beyond courtesy among cast and crew is the issue of the broader public. Many times you will be shooting in public places like parks, sidewalks, beaches, neighborhoods, and coffee shops. These places are not your private film set, so you must treat the public with respect and try not to disrupt their lives too much. In other words, keep as low a profile as possible. This includes not making excessive noise, not parking in such a way that it obstructs other people’s access, being conscientious about litter, and not taking up more space than is necessary. I remember going to a café in my neighborhood where the owner allowed a student film crew to shoot before working hours. But this crew was running late and the café had to open while they continued shooting. Making matters worse, they had totally commandeered the place by strewing pieces of equipment on every table and chair, preventing patrons from sitting down to enjoy a cup of coffee. I took my coffee to go and the owner admitted that he regretted his decision to let them shoot there. The next time a film crew asks, that owner will surely reject the request. Being rude, taking up more space than you need, and bossing the public around so you can get your shot is a sure way to engender hostile feelings for your project and any other film project that tries to work in the same public space. Think of yourself as an ambassador for filmmaking in general—if you leave people with a bad impression, then you’ll spoil it for others.

Respect and Protect the Locations, Props, and Costumes

Making movies often involves renting or borrowing locations that are real-world, functioning spaces, not film sets. The unwritten rule in these cases is that, when the shoot is over, you should leave a location in exactly the same condition you found it, *or better*. It’s important to observe this rule if we are to maintain the good faith of those generous people who open their homes, shops, restaurants, and property to us for the sake of our movies. This requires that you instruct everyone on the team to be careful to protect the location. Additionally, a few extra precautions are standard:

1. Lay clean tarps over carpets before you load in your equipment.
2. Carefully assess the electricity distribution so you don’t overload internal wiring.
3. Designate a single place for the production team to dispose of garbage.
4. Place delicate objects well out of harm’s way, and ask the location owners to secure their valuable items in another place.
5. Be aware of the placement of hot movie lights: they can blister paint and burn drapes. Also, don’t use tape directly on walls as it will peel paint off.
6. Assign someone the job of monitoring the condition of the location. If necessary, this person can suggest that the crew take some time out to clean the space.

7. Take photographs before you move furniture around so that you know exactly where everything belongs when it comes time to return the space back to normal.

From time to time an accident may occur and the location might sustain some damage (e.g., you accidentally gouge the wall while moving a C-stand). Don't try to hide the damage and get away with it; tell the owner of the property and offer to fix it. Also make sure you have some contingency money in the budget to professionally clean or repair the location if necessary.

It's also very common to rent or borrow props and costumes for use in a film. Usually, a prop or costume rental (like an equipment rental) will come with some form of insurance to cover costs of any accidental damage, however there are many times when filmmakers borrow very special items or the personal property of someone because they need a particular prop or costume not easily found at a rental house. For example, I once helped out on a period (early 1900s) production that required a number of period set-pieces and props. I happened to be friends with a woman in the area who owned an antique store and she was extremely generous in loaning precious items for the project that included a very expensive antique bicycle and an exquisite antique clock. In these cases, very special provisions must be made to protect these items, and this is the responsibility of the properties department and wardrobe (or art department on smaller films) but ultimately the director and producer are responsible for damage to precious items. In my case, while I was not officially part of the crew, I still refused to allow anyone on the crew to store or manage these items because I had a solemn obligation to my friend to protect them. So I brought them to the set when they were needed, I watched their placement and use very carefully, and when shooting was over I immediately took them back to their owner.

Unfortunately, there are many cases where filmmakers abuse, and even destroy, props and costumes that were very generously loaned to a project. It may be accidental, but personal items are very often not replaceable. A recent case involved a one of a kind, historic Martin guitar that was destroyed during the shooting of Quentin Tarantino's film *The Hateful Eight* (2015). The scene involved Daisy (Jennifer Jason Leigh) playing the guitar and singing until an enraged John Ruth (Kurt Russell) grabs the guitar out of her hands and smashes it to bits. Sound mixer Mark Ulano described the incident during a film screening panel this way, "The guitar was a loner [sic] from the Martin Guitar Museum and there were six doubles made. The guitar was from the 1870's and was priceless. What was supposed to happen was we were supposed to go up to that point, cut, and trade guitars and smash the double. Well, somehow that didn't get communicated to Kurt, so when you see that happen on the frame, Jennifer's reaction is genuine. [...] Kurt shattered the antique guitar and everyone was pretty freaked out. Tarantino was in a corner of the room with a funny curl on his lips, because he got something out of it with the performance." Ulano then claimed that after learning of the incident the Martin Museum representatives asked, "Do you need another one and can we please have all the pieces to display in our museum?"¹ This incident was recounted in an SSN Insider article as a "particularly amusing story," however, the Martin Guitar Company was not amused. When Dick Boak, a representative and archivist for Martin Guitars, discovered what had actually happened, he said;

We were informed that it was an accident on set. We assumed that a scaffolding or something fell on it. [...] All this about the guitar being smashed being written into the script and that somebody just didn't tell the actor, this is all new information to us. We didn't know anything about the script or Kurt Russell not being told that it was a priceless, irreplaceable artifact from the Martin Museum. [...] We want to make sure that people know that the incident was very distressing to us. [...] I don't think anything can

¹ "SSN Screening Series: The Team Talks About 'The QT Factor', Smashing Guitars and Shooting in Minus 10 Degrees on the Set of Tarantino's 'The Hateful Eight,'" by Diane Panosian, 12/31/15, SSNinsider.com

really remedy this. We've been remunerated for the insurance value, but it's not about the money. It's about the preservation of American musical history and heritage.

(From "Martin Responds to 'Hateful Eight' Destruction of Antique Six String"
by C. McMahon, 2016)

In a Facebook post Boak added, "We certainly didn't ask if they wanted another one. We did ask for the pieces to see if we could salvage anything. We couldn't!"² The bottom line is that such a precious object should *never* have been mishandled, let alone destroyed for the sake of a movie. It's not enough that the properties department know how valuable a special prop is, they must communicate it to the actors handling that prop. The director also should have communicated to the actor where the action was supposed to stop so that the guitar could be swapped out and the replica smashed instead. Clearly, there is culpability to go around and in the end no one protected the precious object that was generously provided and entrusted to them. Such a sad waste.

Respect Your Equipment

Filmmaking is a highly technical art form, and you cannot make a film without equipment. Neglecting, manhandling, or misusing your equipment will undoubtedly hurt you because your gear will either not function properly or cease to function at all. In the case of electrical equipment, misuse can be especially dangerous and even deadly. Respecting equipment includes:

- Educating and training yourself in the proper use of the gear before you get on the set.
- Using a specific production item for its intended use only.
- Not physically modifying or customizing equipment that is not yours.
- Maintaining an orderly set and staging area, and packing equipment away properly.
- Handling all gear with care—this includes protecting equipment from damage, dirt, water, accidents, and general manhandling. Always clean gear when necessary.
- Using common sense at all times (Figure 18-2).

Obviously, when you are renting equipment, you will be charged for damages and your reputation will be scarred. In a school situation, where all students desperately rely on the quick turnaround of common and properly functioning equipment, your manhandling of gear will not only result in a fine or loss of privileges (as in the school where I teach) but it could also jeopardize other students' ability to complete their work, and therefore their film and their grade is put at risk.

PRODUCTION SAFETY AND SECURITY

The information in this chapter is designed to alert you to some of the major issues concerning production safety and security and to prompt you to take them very seriously. These guidelines are here to help you avoid risk of death, injury, arrest, equipment loss and damage, lawsuits, project collapse, and a bad reputation. Absolutely nothing else in this book means anything if your project is not a safe one and catastrophe occurs. This discussion, however, is in



■ **Figure 18-2** Careless handling of equipment will result in damage, production delays, and even injury. This guy is doing everything wrong. By carrying too much gear and dragging improperly coiled cables, not to mention the camera slung recklessly over his shoulder, he's tempting a production calamity.

² Dick Boak Facebook post, Feb. 3, 2016.

no way comprehensive, nor can it address the safety concerns of every production and circumstance. For this reason I urge you to do further research into the specific safety contingencies of your particular project and to check with all the applicable labor union, state government, local government, location, and school safety regulations and procedures before you start rolling the camera.

Every semester, I discuss safety practices in my production classes, first in a general lecture and again when I meet with production crews to discuss their specific projects. I'm happy to say that I have a very good record when it comes to my students pulling off their films without incident; nonetheless there are those occasions, as any production teacher can attest, where students insist on doing things that are strongly ill advised. I collect these experiences (and those from other schools and professional film shoots) to share with future classes, hoping that they will learn from the mistakes of others. I recount some of the most boneheaded and unsafe things I've heard of people attempting in the pressure and stress of a film production. I tell the story of the crew who put their camera operator on rollerblades and had him hold onto the rear bumper of a moving car with one hand while shooting with a \$10,000 film camera in the other—it was cool until they drove over a pothole. I recount the story of the students who improvised a climactic scene of a woman burning a photo of her boyfriend, but they did not give the actress a safe place to drop the burning photo when the flame got close to her hand—so she dropped the fireball into a waste paper basket filled with, well, waste paper. I tell them about the team who wanted to shoot in an abandoned public pool so they ignored the “No Trespassing” sign,



■ **Figure 18-3** This is an exuberant idea for an improvised traveling shot in a time when cars were rare and car mounts nonexistent; however, these days you'd get in serious trouble for trying a move like this. This is one of the rare times I'll tell my readers, “Do not do what this master filmmaker is doing!” From Vertov's *Man with a Movie Camera* (1929).

cut through the chain-link fence, and started shooting—they were surprised when the police officers wouldn't accept “But we're only shooting a movie!” as a legitimate excuse. You'll hear more stories later in the chapter. Every time I tell these stories my students rolls their eyes and snicker at the ridiculousness of the actions. The laughter seems to say, “What an idiot. Who would *do* something like that!?” And yet, from time to time one of those snickering students who was shaking their head ends up doing something like that. Thinking that you're immune from doing stupid stuff can quickly evolve into thinking that you can *get away with* doing something stupid. And the minute you think that you can get away with it is when something bad happens, to equipment or people. So the first step to avoid stupid accidents is to acknowledge that we are all capable of poor judgment and therefore must remain vigilant, stay smart, follow rules, heed warnings, and listen to others who have the experience and expertise to tell us how things should be done and when we're being unwise and reckless (**Figure 18-3**).

in practice

■ THE THREE COMMANDMENTS OF FILM PRODUCTION SAFETY

1. Every filmmaker has a moral and legal obligation to keep the cast and crew, and the public, safe. Lack of funds is never an excuse for poor safety practices.
2. Safety is everyone's responsibility. You are first responsible for safety in your specific

department, but if you see something dangerous or excessively risky anywhere on the set you *must* mention it. *If you see something, say something.*

3. Learn and follow all safety regulations and guidelines that apply to your specific project (union, government, school, location).

Prepare for Safety

A great deal of the effort and attention for ensuring a safe production process happens in preproduction. Don't think that your project is so small or so blessed by the filmmaking gods that you can get away with avoiding these steps:

1. *Research, study, and follow all safety regulations and guidelines that apply to your specific project.* This may include guidelines from the state or local governments and law enforcement; regulations of the specific location where you are shooting; safety requirements of unions that represent your cast and crew, if any; and the safety guidelines established by your school or department as well as the production parameters expressed by your instructor (in the syllabus or verbally) for the class. I have a colleague who was reviewing a student script and saw that the last scene took place on a building rooftop. He was assured that they had permission to shoot on the roof, that the rooftop had high walls around all edges, and that they would not be shooting near these walls. When he saw the dailies, however, there was a shot of the lead actress sitting on the *other* side of the wall, perched on the edge of the rooftop—very stupid and reckless and in clear violation of the safety regulations of the building and the school. Teachers do not create arbitrary limitations or seek to restrict your creative freedom. We impose limitations because we want you and your team to have a safe and successful production so that you may live to make many more films in the future.
2. *Obtain legal permits where it is necessary and respect the parameters of the permits.* It's important to remember that location permits protect both parties involved. The filmmaker is protected because the location is legally approved and secure, and the person or entity that controls the location is protected because the contract releases them from any liability should someone get hurt during the shoot. Many location permits will lay out specific parameters for the shoot (areas and activities allowed or forbidden, specific hours for shooting, type of equipment allowed, number of crew allowed, and so forth). These parameters are usually included for your safety, and in those cases where normal activity at the location will continue during your shoot, for the safety and respect of the people who work there. For example, if you're shooting during a normal work day a nice café owner *might* let you shoot at one or two tables in the far corner, but they probably won't let you take over half the tables and the area behind the counter where they make coffee. It is absolutely imperative that you abide by the rules of the permit. If you are denied a permit, then you *must* move on and find another location (see pages 139 and 432).
3. Assign a **safety coordinator** as part of the production team. On very small shoots this can be the producer, P.M., or A.D. On larger shoots with many locations and safety challenges, this should be a dedicated crew position who should be involved from the very beginning, during preproduction planning.
4. *Location surveys should include looking for and noting any safety concerns on the set.* It's important to bring along one person (safety coordinator) who is responsible exclusively to note all safety issues. This includes a careful assessment of electricity capabilities (discussed later), structural condition, hazardous materials, potential fire hazards, weather exposure, proximity of high voltage lines and traffic, dangerous natural terrain, neighborhood crime trends, hospital proximity, a secure staging area, and so on. This person should also note all emergency exits, fire extinguishers, and access points.
5. *Hold safety meetings with the department heads and producing team.* These meetings are especially important after a location survey so that each department can anticipate and address its specific safety concerns before the shoot occurs.
6. *Distribute emergency information to everyone on a set.* For every location, everyone on the film team should have the emergency contact information for the police, fire department, and ambulance as well as know where the nearest hospital is. It's a good idea to put this information right on the call sheet, which everyone gets (see **Fig. 5-14**).
7. *Consult (or hire) the appropriate safety specialist* if you plan to do anything with fire, automobiles, stunts, prop weapons, water, etc. (discussed later). They are good at

their jobs and a little money in the budget for this will pay off in a safe, trouble-free, and dramatically convincing production.

8. *Schedule reasonable hours.* Allow enough time for the crew to rest between shooting days, and schedule enough time to allow your crew to do their jobs thoroughly and thoughtfully (see page 128). Don't cram so many setups in each day that everyone is rushing and cutting corners just to stay on schedule. Give people time to do their jobs properly.
9. *Everyone must know how to operate their gear before getting on the set.* This is especially important for large and potentially dangerous items like dollies and generators. Speaking of large and dangerous equipment, *do not* rent or attempt to use equipment for which you are not qualified, and do not attempt to use equipment (or do procedures) that requires a trained and certified technician. And *no*, watching a how-to video on YouTube does *not* constitute training. Specifically, do not try to use large trucks, cranes, generators, or high-wattage lights if you're not trained, qualified, and licensed.

Production Insurance

The boom operator is holding the microphone aloft over the scene, the actor walks two steps farther than in the previous take, so the boom operator steps back but trips over a sandbag, falls, and breaks an arm. It can happen to anyone. When the boom operator gets back from the emergency room, he's got a cast and a hospital bill for \$5,000. If you've arranged for production insurance, you're covered; if not, well then your low-budget movie isn't so low budget anymore. Production insurance is necessary for all film shoots, regardless of the size, scale, and budget. Insurance protects the project from catastrophe should there be any injury to the cast or crew or damage to the equipment. In fact, if you want to use SAG actors, you must show proof of insurance before they can enter into a contract with you. Additionally, many rental houses and locations require proof of insurance (some rental houses will provide insurance on equipment for an extra rental fee). Be aware! Finding and securing insurance does not happen instantly—it takes a long time to find an insurance company, determine what kind of insurance you need, and complete the application process, so give yourself plenty of time to go through the process. If you're a student, your department should have information about where and how to acquire production insurance. If you're an independent filmmaker, then there are several insurance companies catering to low-budget films. The Independent Feature Project (IFP) website is a good place to start your search (www.ifp.org). There are more links to insurance resources in the Web Resources section of the companion website.

Common Sense

By far, the preponderance of accidents that happen on the set occur because people forget to use common sense. I've already mentioned this earlier in the book, but it bears repeating; no one on a film set should do or request anything of anyone that would even remotely jeopardize their safety. Asking a camera operator to climb up onto a steep rooftop to get a panoramic shot constitutes a willful and dangerous lack of common sense, as is jerry-rigging a structurally unsound and untested camera mount to a moving car (or any other support). Both cases constitute **negligence**, which is defined as conduct that falls below the standards of behavior established for the protection of others against unreasonable risk of injury (**Figure 18-4**).



■ **Figure 18-4** Do not attempt under any circumstances. No amount of liability insurance or skating prowess will ever make this kind of thing a good idea.

Here is a true story of a staggering lack of common sense that turned dangerous. A group of students in one of my classes (I'm sorry to say) was making a film outside an all-night bodega. The scene they were

shooting involved a big American car pulling up to the bodega and the lead character strutting out. They thought it would be cool to set the camera up in the parking spot on the street so that when the car came to a halt, the front grill would be framed in a tight wide-angle close-up! Already we can see that common sense was not in play here. A wide-angle CU meant that the car would need to stop about 24 inches in front of the camera. But they, and I mean a crew of five with no objections from anyone, decided to go with it and put the tripod and D.P. off the curb, right where the car would pull in. The driver of the car, another member of the crew, all on his own decided that it would be even cooler to come to a *hard stop*, with the tires skidding a bit and the front grill bouncing in front of the lens. Well, you can guess what happened. The car hit the camera smashing the lens, and breaking the D.P.'s finger. The entire crew was banned from using school equipment after that and, needless to say, the movie never got made. It's a sad story, but hopefully it'll encourage everyone reading this book to weigh creative impulses against potential risks and to use common sense.

In addition to willful negligence, ordinary, unintentional carelessness can also create serious problems. I was recently on a set where, in a rush to get a setup done before losing the daylight, I saw a grip struggling to single-handedly carry a 1-K baby, a light stand, a sandbag, a bounce board, and a tangle of extension cables up a steep flight of stairs. Even though I was on set to take photos for this book (i.e., not my department), I stopped the guy and helped him schlep equipment so he wouldn't break his careless neck. You should also avoid (or ban) all possible set distractions, like pets, visitors, iPods, and the reigning king of all distractions, the smartphone. I once visited a student film set and saw someone trying to set up a big 2-K softlight while talking to a friend on a cell phone squeezed between her ear and shoulder. If you see something, say something, right? I told the student to hang up and pay attention to what she was doing. I was amazed that she didn't seem to think what she was doing was all that risky. On a film set, all cell phones should be *off* during work hours unless making a project-related call.

Personal Responsibility and Comportment

Although this next point should be obvious, which is why it's here under the "common sense" section, it must be stated in no uncertain terms. No drugs or alcohol on a film set. By drugs I am not only talking about illegal substances, but you must also be careful with many prescription medications and over-the-counter drugs that cause drowsiness or fuzzy thinking. Many allergy and flu medications are also very effective sleep aids, so before you get on a set, read about the side effects of any medication you're taking.

Also, it's up to each crew member to dress appropriately for their particular role on the set. This is especially important for crew who work with or around heavy equipment and electrical gear. Leather palmed gloves to protect your hands from scorching hot movie lights are obvious, but it should be equally obvious that high heels or open toed shoes are not appropriate footwear if you're required to move equipment, build sets, or work in the middle of a C-stand jungle. Always wear shoes or boots that protect your feet. You should also wear pants which cover your legs, but *not* baggy jeans that slouch half way down your butt. You surely do not need the added encumbrance of your waistband wrapping around your knees while you're carrying a 2-K Fresnel (**Figure 18-5**).



■ **Figure 18-5** Film crews should always show up to a set dressed appropriately for their task. Baggy jeans sagging below the butt, short skirts, high heels, and flip-flops are not only fashion "don'ts" on a film set, they can cause injury.

Finally, it's important for safety's sake to keep your set neat and orderly with room for movement. Use your staging area, put things away that are not being used. Don't leave gear where people can trip on it and never,

ever block emergency exits with equipment. And don't think that organization is someone else's job—*your mommy isn't there to clean up after you.*

Locations and Permits

This point was made earlier, but it's so important that it bears repeating. Never shoot in a controlled location without securing the necessary legal permits, and always abide by the activity parameters established in the permit. Rules, regulations, and restrictions are put in place to protect workers, the public, and the facilities. If you are refused a permit, do not attempt to sneak in and shoot anyway. Find another, similar location that will allow you to shoot, or failing that, re-write the scene to accommodate the available locations (see page 139 for more on location permits).

Earlier in this chapter I recounted the story of the students who cut through a chain link fence to shoot in an abandoned pool clearly marked “No Trespassing;” those students got lucky—they were caught by the police. But on February 20th, 2014, the 27-year-old camera assistant Sarah Jones was killed by a train (and other crew members were seriously injured) while shooting for the film *Midnight Rider* on an active train track without securing the legal permission to do so. According to the final report of the National Transportation Safety Board, “The [NTSB] determines that the probable cause of the accident was the film crew's unauthorized entry onto the CSX Transportation right-of-way at the Altamaha River bridge with personnel and equipment, despite CSX Transportation's repeated denial of permission to access the railroad property.”³ While the conduct and culpability of the production staff and the director are still being litigated as I write this book, sentences have been handed down for criminal trespassing and involuntary manslaughter; the director, who pleaded guilty, received jail time; and this highly publicized case shook-up the film industry into seeking industry wide improvements in production safety and production leadership accountability. But beyond the legal dimensions, this tragedy should never have happened; it was entirely avoidable, and the director and producers should have been much more attentive to the safety of their film crew. To have been denied a permit *twice* is something which should never have been disregarded, overlooked, or ignored. Clearly, the permits were denied to them for good reason—if only they had accepted the decision and moved on. Sarah Jones' family has created the website “Safety for Sarah” to help bring attention and pro-active effort to the issue of film production safety. You can go to www.safetyforsarah.com to find out more.

Rest and Health

Filmmaking on any level is strenuous work. Keep yourself healthy and mentally sharp by getting enough sleep and eating well during your production period. Also, allow your crew the same. Without rest, your thinking and coordination will be blunt and you'll lack the energy to deal with the general intensity level of filmmaking—no one is an exception. Also, be sensitive to driving times. If you're shooting 250 miles out and expect to wrap at midnight, arrange for hotel accommodations; do not ask anyone to drive four hours to get home after a 12-hour workday.

Weather

The entire production team must watch the weather and dress appropriately. In cold conditions wear extra clothes, beyond what you would normally wear on a cold day. When you are working in cold weather for hours, the cold eventually seeps in. In extreme cold conditions, an exterior location should always have a sheltered, heated area nearby where cast and crew can warm up. If you're in a remote area, this could be a tent or shed with a portable heating unit.

In extremely hot weather, lots of drinking water is especially crucial and if you're outside, protect your crew from sun exposure. This means providing sunblock and shade in the

³ NTSB Accident Brief Press Release, March 23, 2015, www.nts.gov/investigations/AccidentReports/Reports/RAB1501.pdf

form of tarps and umbrellas (which also protect equipment from direct sun). Finally, don't shoot in hostile weather just to stay on schedule. Ice storms, rainstorms, heavy snow, and gale force winds not only make for a miserable experience and compromised footage, but are simply dangerous. Don't risk injury to personnel and damage to equipment, just reschedule.

Risky Locations

You should know, long before you arrive to shoot, if your location is safe through your location scouting (see Chapter 6). If during the location scouting or tech survey you discover that a location is not structurally secure, that there are hazardous materials on the site (asbestos, flammable or toxic compounds), or that the electrical wiring is not up to code, then simply look for another location. It's also best to avoid dangerous locations like steep cliffs, soft riverbanks, and busy highways. Dangerous neighborhoods or buildings known for high crime or gang activity can put your crew and equipment at risk. If you must shoot in dangerous neighborhoods, contact the local police and find out what provisions are available for security. I tell my classes the true story of a small crew who were making a fiction/documentary hybrid film and wanted to capture some gritty reality so they followed the subject of the film, a true heroin addict, as he went to a dealer to score drugs. The next thing they knew, the crew had guns pointed at them and all of their money and equipment was taken. Did it not occur to them that these are dangerous people? Did they think their status as filmmakers would protect them?

Picture Vehicles and Drones

We use automobiles in films quite a bit, and extreme caution must be exercised around them at all times. Whenever a person drives a vehicle in a distracted state, like while talking on a cell phone, they are prone to accidents; this also includes acting. When performers are acting (i.e., recalling lines, staying in character, finding emotions), they are very aware of being on film and much less attentive to the road.

Car camera mounts must be rigged and tested by people who know what they're doing and should never be driven on public roads without a permit. I often tell a story, which comes from another film school, of the director and camera operator who wanted to get some pickup shots from out of a window of a moving car. While the camera operator hung out the window with the camera (!?), the director drove the car and gave direction. They weren't going fast, but distracted as they were, they crashed the car, damaged the camera, and had to deal with police, school administration, insurance companies, and so on. They were lucky no one was hurt.

For inexperienced filmmakers, car chases, screeching tires, and car stunts of any kind are very bad news and absolutely not recommended. The majority of stunt-related deaths and injuries involve vehicular accidents. Automobile stunts, including driving fast, must always be accomplished by trained "precision drivers" driving carefully prepared picture vehicles, and these professionals are often out of budget reach for students. In addition, there is an enormous amount of coordination, permit work, and insurance coverage involved in car action sequences. Even the "simplest" car stunt is dangerous. The story related earlier about parking the car inches in front of the camera attests to that.

Mounting a camera on drones (a.k.a. UAV or Small UAS) for aerial shots has become increasingly popular (see page 265). While there is no doubt about their value to gather low-cost aerial footage, it must be acknowledged that drones are not toys; they require training to use correctly and safely, and they require permits. Drones are not "easy" to control so your operator must be thoroughly trained and certified. You don't want to crash a drone into an actor's face, nor do you want to crash your equipment into a tree. Clearly, flying drones over crowds of unaware people is a terrible idea given the chance that something could go wrong; a drone and camera falling from several hundred feet can do serious damage. The second note of caution is that there remain many legal issues concerning the use of drones in general. These are, after all, potentially powerful surveillance devices

and can be seen as invasive. The FCC forbids UAVs within a specific radius of airport flight corridors and many government buildings also restrict drone use nearby. If you fly a drone near the homes of unsuspecting people, you can expect them to call the police believing someone is spying on them or casing out their property. So you must do your research—check with the local film office and contact the FCC to learn the restrictions and protocols at your location. Also, many film schools have established policies concerning the use of drones for student film projects—some schools forbid it outright, while others have strict parameters for their use. The bottom line is, make sure you take all necessary precautions and have all necessary permissions before putting anything in the sky with a camera on it.

Weapons and Violence

Never use a real weapon in a movie. No real guns ever and no real knives. You must always use **prop weapons** (a.k.a. simulated weapons). **Prop knives** are blunt and often made of plastic or rubber. **Prop guns** come in three flavors: **rubber guns**, which are made of heavy rubber material; **nonfiring “function” guns**, which are made of metal and have working hammers, slides, triggers, and cartridges but have no chamber and cannot fire anything; and **blank-firing guns**, which make a bang and produce a flash out of the barrel. Blank-firing guns can still injure or kill you when not used properly and they require additional permits and insurance to use on a set. It is best not to use a blank-firing gun at all, and most schools strictly prohibit their use for student films. You must also be careful with nonfiring guns, as they are designed to look authentic and can easily be mistaken for a real gun if taken anywhere off your set.

As was the case for *Kiarra’s Escape*, the student film excerpt that is streaming on the *Voice & Vision* companion website, students wanting to use a nonfiring prop gun are usually required to get permission from the instructor and the program’s production area head or safety supervisor. To get this permission they must: (1) provide extensive detail for the prop’s use (a final draft script), (2) prove that they have the appropriate production insurance, (3) are renting from a reputable theatrical prop house, and (4) have received training in the prop’s use. Additionally, the shooting location itself may require more information, special insurance, police supervision, and so on (**Figure 18-6**).

If you have a prop gun in your film (nonfiring or blank-firing), here are a few essential rules:

1. Review all state and federal laws concerning theatrical weapons use.
2. Always rent from a certified and reputable prop weapons rental house.
3. The people handling the gun (actor and prop master) must be trained in how to use the prop.
4. Treat every gun, even a nonfiring prop, as if it’s a loaded weapon.
5. No one else may touch the prop weapon or blanks.
6. You must have a secure place to store prop guns when not in use.
7. Always notify the local police about your intention to use a prop weapon, whether indoors or outdoors, and arrange for police supervision if required.



■ **Figure 18-6** The nonfiring prop guns used in the film excerpt *Kiarra’s Escape* (on the *Voice & Vision* companion website) required special permission from the school and were handled exclusively by the prop master and actors who were trained in their use. They were also securely locked away when not in use.

This last point is commonly sidestepped by novice filmmakers because they believe it’s a hassle that could potentially derail their production, but it is essential, for the protection of the entire cast and crew, to inform the local police of your intention to use a prop firearm or stage violence in a public space. It does not matter if you are shooting on a sidewalk or an interior scene on private property, passers-by and neighbors can see inside homes, stores, or any other location. If they see someone pointing a gun at someone else, they will call the police. Recently, an independent filmmaker making

a mafia movie on Long Island was shooting a scene of a convenience store robbery. The action included actors holding guns on a store clerk *inside* a rented convenience store. The crew was very small and they were shooting with a small-format camera using mostly available lights, so there were no overt signs that filming was in progress. Someone driving by saw what was happening through the windows and called the police. The next thing they knew, real cops stormed the shop with real guns drawn and disarmed the actor “with force.” Luckily, very luckily, no shots were fired before the police realized that this was a film shoot and the guns were props. The producer and director placed their entire cast and crew, and the police officers, in grave danger by not making a simple phone call to notify the police ahead of time of the project (Figure 18-7). More on prop weapons safety can be found at www.moviegunservices.com/mgs_safety.htm.

It’s important to remember that this concern is not only about guns. You should notify the police of *any* scene of aggression or violence that takes place at an exterior location, even if it does not include weapons. I tell the story of a group of students who ended their film with a scene of a man beating up a former friend who stole everything from him. At the last minute, they decided to change the location from inside an apartment to the courtyard between apartment buildings. Neither actor was trained in fight choreography, so they decided to shoot it in an extreme long shot from the apartment window for believability’s sake. As the scene unfolded in the courtyard, people from the surrounding apartments looked out their window to see what the commotion was all about. They saw two men fighting, cursing, and screaming with each blow—but they did not see a film crew or a camera, as they were shooting from inside a third-floor apartment. Because these were very convincing actors, it did not appear to be kids fooling around. So the police precinct received emergency calls about a terrible assault in progress, and cops surrounded the courtyard.

Fire and Open Flames

Fire is unpredictable and flames of any size can quickly get out of hand, so fire should always be avoided. Many schools and locations absolutely forbid open flames of any sort on film shoots, so make sure you check all regulations that apply to your project. If your film



■ **Figure 18-7** News stories of vehicle accidents, accidental fires, misuse of prop guns, and real arrests on film shoots. This is not the way you want your movie to make it into the news.



■ **Figure 18-8** Even though this romantic scene from Shelton's *Bull Durham* (1988) uses common household candles, the many open flames pose a huge fire risk, which must be taken seriously. For shots like these, a dedicated safety supervisor should oversee the art department setup to ensure that the flames are not near flammable materials and this person must also be on set, with a fire extinguisher, during production.

absolutely must have a fire of any size at all (like a campfire) and you are legally allowed to have one, then you should have a trained, bonded, and insured **pyrotechnics expert** on the set. The same goes for any type of legal fireworks (illegal fireworks are, of course, forbidden).

Even if your film has something as small and ordinary as birthday candles or a match lighting a gas stovetop burner, always designate a person to watch that open flame, and make sure they are armed with a fire extinguisher (**Figure 18-8**). Here is a story I heard from another film school. The scene was a birthday party of an elderly man. The art department thought that 65(!) birthday candles would look better than two candles (a six-shaped candle and a five-shaped candle). Sixty-five small candles add up to a lot of fire! As the students were lighting the candles, they forgot to start with the inside candles and work

their way out—so someone burned their hand, jumped, and knocked the cake over; the lit candles fell on the paper napkins, and a fire quickly started. Luckily, the crew doused it with the punch from the punch bowl, but they narrowly escaped a serious disaster.

Fire is no joke. Always make sure that matches, lighters, or anything else used to ignite a flame are put securely away after the scene and not just left around. Always have a fire extinguisher on the set (either bring your own or, in public buildings, locate the nearest available one) whether you're using open flames or not.

Water

I discuss electricity and water (showers, pools, etc.) later (see page 441), but if you are shooting on a boat or near any large body of water, do not use electricity at all; rather, since you'll be outdoors, use bounce boards. Additionally, life vests and safety lines are mandatory. Don't use "tippy" boats, and don't overload boats. Many scenes that ostensibly take place in open water are actually shot with the crew and equipment on a pier and the talent in the water only a few feet away. No one knows what's off screen, so be creative, cheat the shot, and you won't find yourself tipping over in a rowboat and dumping that \$25,000 RED One camera to the bottom of the lake (**Figure 18-9**).



■ **Figure 18-9** Scenes that take place in open water can often be cheated closer to the shore so that crew and equipment remain on solid ground. In this production still from *De Daltons* (2007), the film crew remains on the pier while shooting a scene in the water. Notice the extra personnel standing by the camera (*right*) and wrangling cables (*left*) to make sure everything and everyone remains dry.

Physical Stunts

Here's a comedy scene: a woman races down a grocery store aisle, turns the corner, and knocks the store manager over with her cart. This can be funny, but it's also a stunt and can cause injury. For very simple stunts like this, you should first cast a performer who is in good physical shape and knows how to fall without breaking bones. Then you must protect the actor with body pads and floor mats off screen. Also, rehearse the stunt until the actor is comfortable with the fall. However, in many cases (e.g., your store manager is played by a frail elderly actor) even a simple fall like this could pose a danger. Some actors will just never fall well or convincingly.

Don't take risks. Most physical stunts require a **professional stunt performer**. If your script calls for someone to, say, crash a bicycle on the sidewalk, slip on some stairs, climb over a chain-link fence, or engage in a fight, you cannot do these things with regular actors. First, you stand a good chance of hurting the talent, no matter how well padded they are, and second, most actors will never give you a convincing fall because they just don't know how. Professional stunt people are worth the extra expense and insurance precisely because they know how to do stunts so that no one gets hurt and yet are dramatically (or comically) convincing (**Figure 18-10**). Veteran stunt performer and stunt coordinator Matt Anderson, whose many credits include feature films and TV, describes his job like this:

If I'm just working as a stunt man, my job is to simply make something look as dangerous as possible, while actually taking as little risk as possible. That's the profession. [...] You don't really want to hire an actor to go down a flight of steps, so you hire a stunt man that can do the job. As a stunt coordinator, it is your job to know the people that can do these things. Usually, they've worked in the business for a longer period of time, they know how to do the stunts and know how everything is set up. But first and foremost as a stunt coordinator, your job is safety. You have to make sure you can make something look spectacular without crashing a lot of people and putting them in the hospital

Matt Anderson (From www.pollystaffle.com)



■ **Figure 18-10** A trained stunt performer can make physical stunts look very dramatic while keeping everyone safe. Pictured is stuntman Matt Anderson in Davis' *Forget About It* (2006).

The two critical aspects here are the emphasis on safety (which should be your emphasis as well) and the ability to make even simple stunts completely convincing. There are many agencies, like Stuntworks.com, where you can consult with stunt coordinators before you undertake any sort of physical stunt and cast stunt performers. When casting for a stunt performer, you'll notice that each person specializes in different things—some are good at falls, and others (usually martial arts trained) are expert at fight choreography—and they will be very specific about their physical type so that you can make a good physical match with your talent in cases where you're looking for a stunt double.

Security

In addition to safety, you must think about the security of people, equipment, and personal belongings when you are shooting, especially on location. Theft of equipment and the personal belongings of cast and crew is a common problem on film sets. A producer must ensure that the staging area for equipment is secure and that the actors have a safe place to store their personal belongings while they are on set and in costume. This is especially challenging when you are shooting in a public exterior location. In some cases you may need to assign a person the job of locking away and watching over people's belongings. Never just leave valuables and equipment in a car. Cars get broken into all the time. I have many stories of lazy students who left equipment in a locked car overnight (rather than unload and lock it away indoors) only to find everything gone the next morning. My colleague told me a story of driving home from a long shoot with her D.P. and stopping to have a bite to eat. They tried to find a bonded (insured) parking lot because they had some equipment in the van, but they couldn't find one so they parked on a fairly busy street. When they returned to the van, all the locks had been popped off and the equipment was gone. In this instance she was lucky on three counts: (1) she had paid extra for theft insurance when she rented the van, (2) the D.P. did what any professional would do—he took

the camera into the restaurant with him (never leave a camera in an unattended vehicle), and (3) the thieves were not interested in all those DigiBeta tapes in the van and left them behind—these contained all the footage they had shot up to that point!

Gear also gets stolen when there are not enough people loading or returning equipment. One person must be assigned the job of watching the vehicle while others take equipment inside. Loss also often happens on messy, disorganized sets. When set strikes are rushed and haphazard, things get left behind. Leaving equipment in a public hallway while the entire crew is in an apartment shooting is asking for it to get stolen. People will steal your equipment, boxes, extension cords, gels, C-stands, tape, purses, computers, whatever, if you give them the opportunity,

Security also means providing a safe place for cast and crew to work and not asking them to go into unsafe territory just getting to or from a location. For example, if people must travel through dangerous areas late at night, provide escorts or shuttle transportation.

in practice

■ ADDITIONAL SAFETY INFORMATION RESOURCES

There is much more to learn about safety and there may be areas of specific concern for your particular project that were not covered. To find more information, the best place to start is with the Contract Services Administration Trust Fund (CSATF). Within the CSATF is an Industry Safety Committee, which is composed of guild, union, and management representatives active in industry safety and health programs. This committee researches and publishes bulletins and guidelines that provide detailed guidance for film and television industry safe practices.

The CSATF publication *General Code of Safe Practice for Film Production* is a basic summary of safety standards and is a *must read* for everyone involved in film production. You can download this document from the *Voice & Vision* companion

website (Chapter 18) or the CSATF website, www.csatf.org/pdf/GenCodeoSafePractices.pdf.

The CSATF *Safety Bulletins* are much more detailed recommendations for safety standards as they pertain to specific issues and circumstances, like the use of prop weapons, stunts, animals, cold weather, etc. You can find the bulletins at www.csatf.org/bulletintro.shtml.

Another highly informative publication is the *Safety Guidelines for the Film and Television Industry in Ontario*, which is published by the Ontario Ministry of Labour. Whether or not you are shooting in Canada, this is a well-researched, cogently organized, and highly informative publication concerning film production safety. You can find a pdf of these guidelines on the *Voice & Vision* companion website or on the Ontario Ministry of Labour website: www.labour.gov.on.ca/english/hs/pubs/filmguide.

■ ELECTRICITY AND SAFETY

Film and video production often requires the use of many lights, adding up to thousands of watts of power; using lots of lights means that a filmmaker is harnessing a great deal of electricity. Electricity is dangerous stuff and must be treated properly. A few safety principles and common sense are all it takes to ensure a safe and successful production experience (Figure 18-11).

How Much Electricity?

Before you start plugging lights in, you need to determine how much electricity you have at your location and how it's distributed. This will help you figure out how many lights you can work with and where they can be set up and plugged in. This simple procedure for determining how much power you have and where it is should be done during your location survey. It can save you a lot of time and labor by keeping you from lugging more lights than you could possibly use



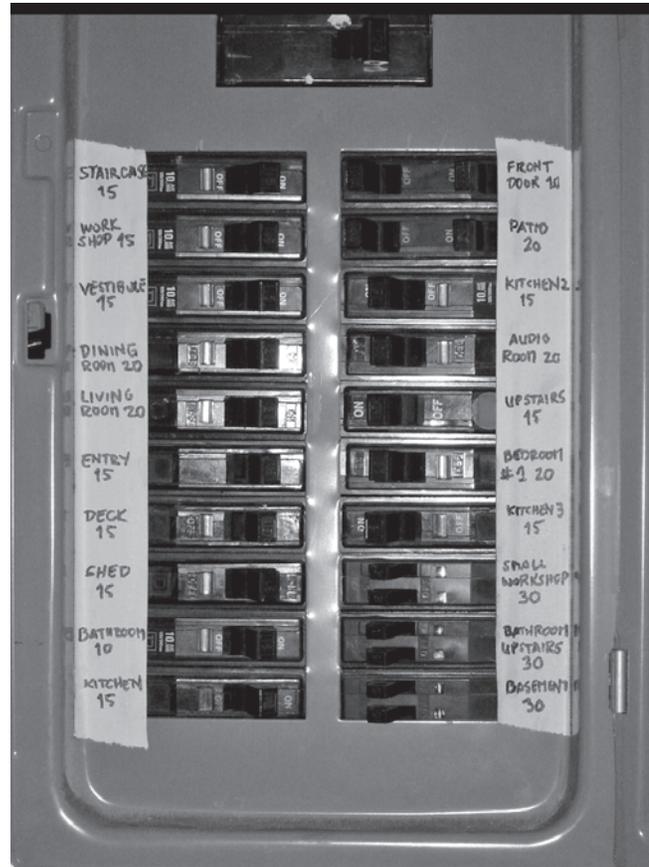
■ **Figure 18-11** Electricity can kill you. Care, common sense, and knowledge are required even when using minimal movie lighting.

or by keeping you from having to completely overhaul your lighting scheme when you discover the layout you envisioned at your desk isn't possible, given the facts of electricity distribution on the location:

1. Locate the **breaker box** (or fuse box) for your particular location. A breaker box brings the raw power from the utility company into a building and breaks it out into various circuits distributed throughout the rooms. Each circuit is rated in **amps** (short for amperes) and has a dedicated breaker switch (or fuse) with the amp rating written right on it. The amp rating tells us how much electricity can safely flow through that circuit. Common circuit ratings found in homes and apartments are 15 amps (most rooms) and 20 amps (rooms that use heavy-draw appliances, like kitchens and bathrooms), but you'll need to check your breaker box to be sure. If you exceed the circuit's rating by plugging in too many lights, the breaker will trip and cut the electricity (with a fuse; a metal filament embedded in the fuse melts and breaks the connection). If the breaker trips, you can simply reset it with the flick of a switch, but you also need to reduce the amount of electricity you are drawing on that circuit or it will trip again (fuses must be replaced). The purpose of breakers is to keep the building from burning down. Excess electricity can heat the internal wiring so much that the insulation melts, leaving super hot and exposed wires to start a fire. If you're using extensive lighting and you do not have access to the breaker box, then it may be too risky to shoot at that location; if you blow a fuse, it's lights out for the rest of the shoot (**Figure 18-12**).
2. The next step is to determine which wall outlets are on which circuits. Usually there are several outlets per circuit, but it's impossible to know exactly how many and how they are clustered without testing them. To determine the distribution, simply turn on one breaker at a time and plug a **circuit tester** into each outlet. Take note of which breaker controls which outlet throughout your location. Occasionally breakers will be labeled "kitchen," "living room," "master bedroom," etc., but these labels are often flat-out wrong, so it's best to simply figure out for yourself which outlets are connected to which breaker switch. Also, we use a circuit tester because this tool will reveal if any outlets are improperly wired and therefore dangerous (**Figure 18-13**).
3. Calculate the amount of electricity you can draw on each circuit. To determine how many watts you can plug into any single circuit, use the following formula:

$$\text{watts} = \text{volts} \times \text{amps}$$

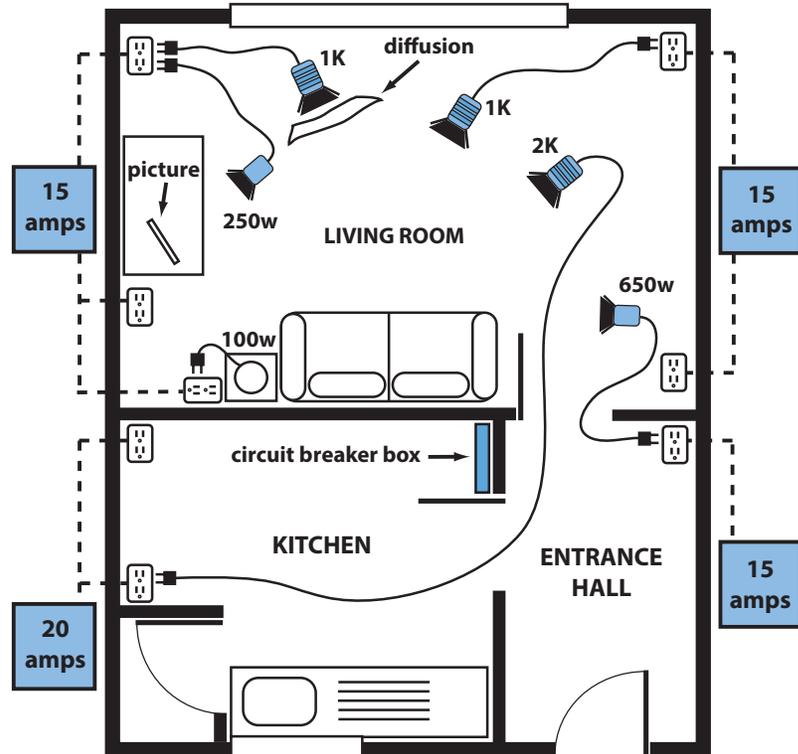
We already know what amps are and their rating can be read straight off the breaker of each circuit. **Volts** (voltage) are the measure of the electromotive force of the electrical current in a system. Volts are standardized by



■ **Figure 18-12** Electricity on location. A lighting crew has carefully labeled this household breaker box after determining where each circuit is located and what the amperage rating is.



■ **Figure 18-13** Circuit testers will tell you if the circuit is properly wired with a "hot," a "return," and a ground. It's not uncommon to find improperly wired outlets.



■ **Figure 18-14** Overhead diagrams that detail both the distribution of electricity at a location and where each lighting unit will be plugged in are essential to keep from tripping breakers during your shoot. Notice that the cumulative wattage plugged in to any given circuit does not exceed its amp rating.

country. In the United States a normal **AC** outlet (for **Alternating Current**) fluctuates from 100 to 120 volts. To give ourselves some margin for safety it's always best to use the conservative figure 110 volts for our calculations:

$$110 \text{ (volts)} \times 15 \text{ (amps)} = 1,650 \text{ (watts)}$$

$$110 \text{ (volts)} \times 20 \text{ (amps)} = 2,200 \text{ (watts)}$$

So, we can plug in up to 1,650 watts of light on each 15-amp circuit and 2,200 watts of electricity on a 20-amp circuit (**Figure 18-14**). However, many gaffers feel that it's not safe to go right up to the limit of any circuit; as wires start to heat up, fuses can blow. Also, be careful to take into account or unplug any appliances at the location that also draw power. It's easy to forget that the refrigerator is plugged into the kitchen's 20-amp circuit. If lights adding up to 2,100 watts are plugged in while the refrigerator compressor is off, invariably the fridge will kick back on just as an actor is delivering the most moving performance of their career, and **BLAM!**—the breaker trips and the lights go out. Cut!

Electrical Loads and Time

The length of time that filmmakers keep lights powered is a factor that can also push a circuit to the breaking point as cables heat up. A provision in the National Electrical Code states that if an electrical load is run continuously for more than three hours (as we often do on a film set) then it must be considered a **continuous load**. A circuit that has a continuous load *must* be de-rated to 80% of the posted protection. So if we plan to power our lights on a 20-amp circuit for more than three hours *continuously*, we must rate that circuit (and do our calculations) at 16 amps ($110 \times 16 = 1,760 \text{ watts}$). For a circuit that is ordinarily 15 amps, our continuous load calculation must be made with a 12-amp rating ($110 \times 12 = 1,320 \text{ watts}$).⁴

⁴ Many thanks to educator, author, and D.P. Harry Box for his valuable input on this section.

Lighting and Grip Safety Tips

1. The first rule of safety is to use common sense at all times. Things can become quite hectic on a film shoot—but you should always take your time and do things correctly. Never cut corners on safety to save time and don't try to get away with untested, unsafe jerry-rigging.
2. Never attempt to do things that require the expertise of a trained and certified electrician. This includes doing repairs on high wattage units, opening up breaker boxes to tie into the mains, rewiring outlets, and so on. And again, watching a “how-to” video on YouTube does not constitute adequate training. I once had a student who was planning an exterior night shoot and he asked about the possibility of tapping into the power of a public streetlamp. “It can't be that hard,” he said; “I've seen people pop off the covers and rig their own plug-in right on the street.” When he saw the incredulous look on my face he added, “Yeah, maybe it's not such a good idea.” Indeed!
3. Maintain a professional attitude toward your equipment. Abused and manhandled gear will break and, in the case of lighting equipment drawing thousands of watts of electricity, can bite back!
4. Movie lights get very hot and can burn everything from hands to walls. Keep flammable items away from lights. When bouncing lights off walls, keep them back far enough that they will not blister the paint. Be aware of all flammable materials on the set (costumes, set dressing, etc.) and keep lights clear. Always wear leather-palmed grip gloves when handling hot lights. For lighting units of 500 watts and more, never put gaffer's tape or gels in direct contact with the unit's housing or even the barndoors; they will melt. When attaching gels to barndoors, clip several C-47s to the barndoor first and then clip the diffusion to the C-47s (**Figure 18-15**).
5. Gels designated with the word “tough” (tough spun, tough blue, etc.) are flame resistant and can be used near lights but will melt if not mounted properly. Also, carefully handle the scrims that are used in lights to cut the intensity—they also get super hot. Back when I was a student I was on the set of a classmate who removed a scrim from a 1-K baby and dropped it on his mother's carpet. When the shoot was over he went to pick it up and discovered that it had melted the nap and was fused to the carpet. When his mom came home, he lost the one location he thought he could always count on.
6. Always turn off lights when not in use; and after a shoot, turn them off right away and let them cool down completely, on their stands, before you pack them away.
7. Never touch the lamp of a movie light, even if it is cool. Lamps get extremely hot and will obviously burn you. But touching a cool lamp with your bare fingers is also dangerous because your fingers leave oil on the bulb; the oil cooks when the lamp is turned on and eventually causes the bulb to explode. Always use the plastic or paper sheath provided with a new lamp to handle the bulb when you are replacing it.
8. Electricity and water do not mix. Duh! When shooting scenes involving water, like bathtubs and swimming pools, it's best to go with available light. If you must use lighting for interior bathroom scenes, do not set up lights where they could fall into the water. In fact, my students are not allowed to have movie lights in the same room with a full bathtub or running shower. They must bounce light from a unit set up outside the door. In addition, they are required to station a grip at each unit for added safety.
9. When setting up a lighting unit or a C-stand, try to keep the weight as evenly distributed as possible. An unbalanced C-stand can easily topple over; so can a fully extended light stand with a heavy instrument on top. Use a sandbag to stabilize every stand (**Figure 18-16** *left*). Try not to create unbalanced gobo extensions. In addition,

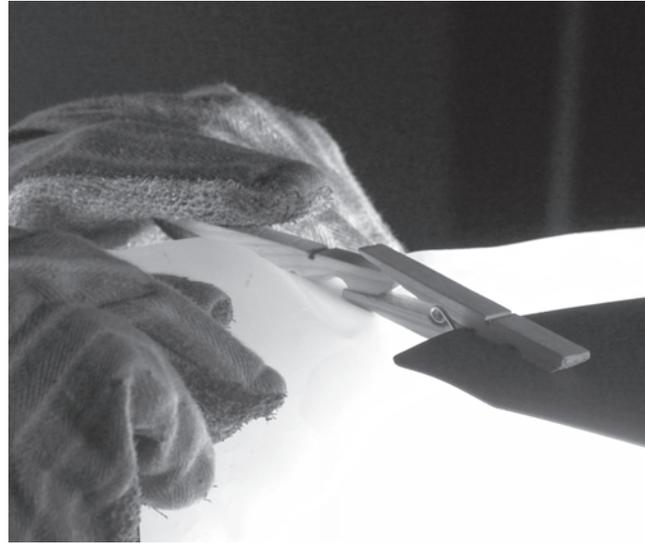
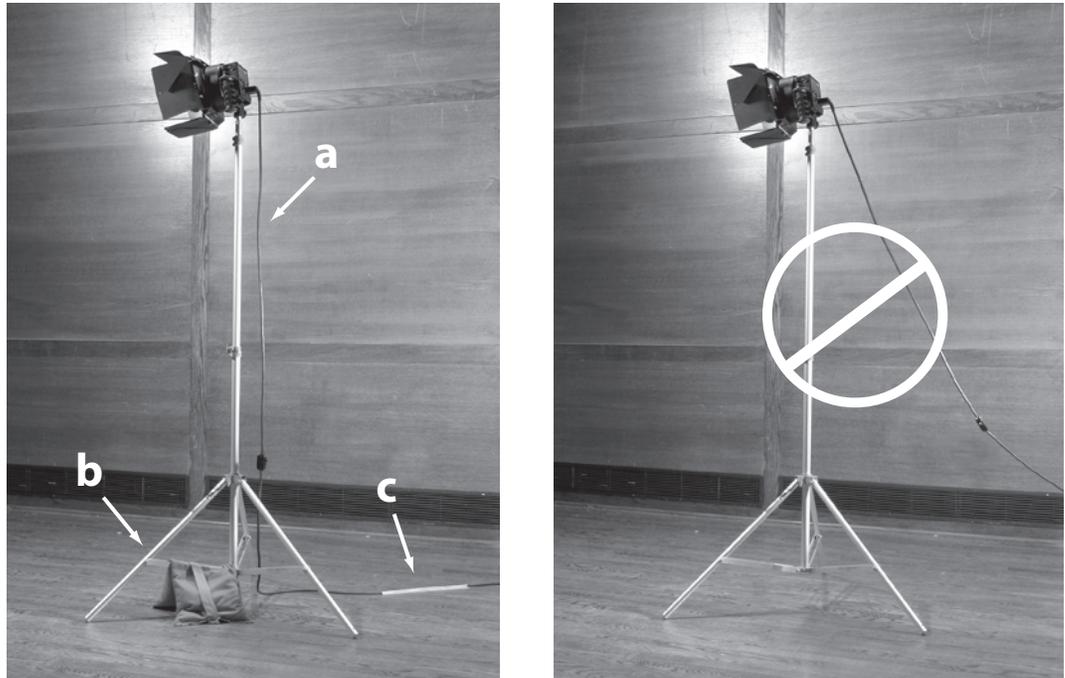


Figure 18-15 Diffusion and gels should be attached to barndoors using a couple of C-47s to avoid melting and fires. Always wear leather-palmed gloves when handling lights.



■ **Figure 18-16** Lights should always be set up with the cable flush against the stand (a), stabilized with sandbags (b), and cables taped to the floor to prevent accidents (c).

rotate the gobo arm such that the weight of the object pulls the gobo arm in the direction of tightening the gobo head. Do not allow gravity to pull the arm in a direction that would loosen the head.

10. Keep your cables neat. Use stingers to allow cables to fall straight down from the unit to the ground rather than stretching out diagonally to reach an outlet (**Figure 18-16** right). In areas where there is a lot of foot traffic, tape down your cables with gaffer's tape (called **dressing cables**). And always coil unused cables and put them out of the way, safely in the staging area.
11. All hanging lights, barndoors, and any other item rigged overhead should be secured with a safety chains.